



## SEQUENCE LISTING

<110> EVANS, RONALD M.  
CHEN, J. DON  
ORDENTLICH, PETER  
DOWNES, MICHAEL R.

<120> FAMILY OF TRANSCRIPTIONAL CO-REPRESSORS THAT INTERACT  
WITH NUCLEAR HORMONE RECEPTORS AND USES THEREFOR

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<140> 09/522,753

<141> 2000-03-10

<150> 08/522,726

<151> 1995-09-01

<160> 52

<170> PatentIn Ver. 2.1

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<212> PRT

<213> Mus musculus

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Phe Lys Arg Arg Asn His Ala Arg Lys Gln Trp Glu Gln Arg Phe Cys
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Gln Arg Tyr Asp Gln Leu Met Glu Ala Trp Glu Lys Lys Val Glu Arg
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Phe Met Gln His Pro Lys Asn Phe Gly Leu Ile Ala Ser Phe Leu Glu
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Thr Gly Thr Glu Ala Leu Pro Ala Ala Thr Gln Pro Pro Val Pro Pro	545	550	555	560
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Met Trp Glu Lys Pro Glu Glu Pro Glu Ala Ser Glu Lys Pro Pro Lys	625	630	635	640
Ser Val Lys Ser Asp His Lys Lys Glu Thr Glu Glu Glu Pro Glu Asp		645	650	655
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<400> 11

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Arg	His	Gln	Gln	Glu	Phe	Ala	Val	Pro	Asp	Tyr	Arg	Ser	Ser	His	Leu
		35					40					45			
Glu	Val	Ser	Gln	Ala	Ser	Gln	Leu	Leu	Gln	Gln	Gln	Gln	Gln	Gln	Gln
	50					55					60				
Leu	Arg	Arg	Arg	Pro	Ser	Leu	Leu	Ser	Glu	Phe	His	Pro	Gly	Ser	Asp
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Arg	Pro	Gln	Glu	Arg	Arg	Thr	Ser	Tyr	Glu	Pro	Phe	His	Pro	Gly	Pro
				85					90					95	
Ser	Pro	Val	Asp	His	Asp	Ser	Leu	Glu	Ser	Lys	Arg	Pro	Arg	Leu	Glu
			100					105					110		
Gln	Val	Ser	Asp	Ser	His	Phe	Gln	Arg	Val	Ser	Ala	Ala	Val	Leu	Pro
		115					120					125			
Leu	Val	His	Pro	Leu	Pro	Glu	Gly	Leu	Arg	Ala	Ser	Ala	Asp	Ala	Lys
	130					135						140			
Lys	Asp	Pro	Ala	Phe	Gly	Gly	Lys	His	Glu	Ala	Pro	Ser	Ser	Pro	Ile
145					150					155					160
Ser	Gly	Gln	Pro	Cys	Gly	Asp	Asp	Gln	Asn	Ala	Ser	Pro	Ser	Lys	Leu
				165					170					175	
Ser	Lys	Glu	Glu	Leu	Ile	Gln	Ser	Met	Asp	Arg	Val	Asp	Arg	Glu	Ile
		180						185					190		
Ala	Lys	Val	Glu	Gln	Gln	Ile	Leu	Lys	Leu	Lys	Lys	Lys	Gln	Gln	Gln
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Leu	Glu	Glu	Glu	Ala	Ala	Lys	Pro	Pro	Glu	Pro	Glu	Lys	Pro	Val	Ser
	210					215					220				
Pro	Pro	Pro	Val	Glu	Gln	Lys	His	Arg	Ser	Ile	Val	Gln	Ile	Ile	Tyr
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Asp	Glu	Asn	Arg	Lys	Lys	Ala	Glu	Glu	Ala	His	Lys	Ile	Phe	Glu	Gly
				245					250					255	

Leu Gly Pro Lys Val Glu Leu Pro Leu Tyr Asn Gln Pro Ser Asp Thr	260	265	270
Lys Val Tyr His Glu Asn Ile Lys Thr Asn Gln Val Met Arg Lys Lys	275	280	285
Leu Ile Leu Phe Phe Lys Arg Arg Asn His Ala Arg Lys Gln Arg Glu	290	295	300
Gln Lys Ile Cys Gln Arg Tyr Asp Gln Leu Met Glu Ala Trp Glu Lys	305	310	315
Lys Val Asp Arg Ile Glu Asn Asn Pro Arg Arg Lys Ala Lys Glu Ser	325	330	335
Lys Thr Arg Glu Tyr Tyr Glu Lys Gln Phe Pro Glu Ile Arg Lys Gln	340	345	350
Arg Glu Gln Gln Glu Arg Phe Gln Arg Val Gly Gln Arg Gly Ala Gly	355	360	365
Leu Ser Ala Thr Ile Ala Arg Ser Glu His Glu Ile Ser Glu Ile Ile	370	375	380
Asp Gly Leu Ser Glu Gln Glu Asn Asn Glu Lys Gln Met Arg Gln Leu	385	390	395
Ser Val Ile Pro Pro Met Met Phe Asp Ala Glu Gln Arg Arg Val Lys	405	410	415
Phe Ile Asn Met Asn Gly Leu Met Glu Asp Pro Met Lys Val Tyr Lys	420	425	430
Asp Arg Gln Phe Met Asn Val Trp Thr Asp His Glu Lys Glu Ile Phe	435	440	445
Lys Asp Lys Phe Ile Gln His Pro Lys Asn Phe Gly Leu Ile Ala Ser	450	455	460
Tyr Leu Glu Arg Lys Ser Val Pro Asp Cys Val Leu Tyr Tyr Tyr Leu	465	470	475
Thr Lys Lys Asn Glu Asn Tyr Lys Ala Leu Val Arg Arg Asn Tyr Gly	485	490	495
Lys Arg Arg Gly Arg Asn Gln Gln Ile Ala Arg Pro Ser Gln Glu Glu	500	505	510
Lys Val Glu Glu Lys Glu Glu Asp Lys Ala Glu Lys Thr Glu Lys Lys	515	520	525
Glu Glu Glu Lys Lys Asp Glu Glu Glu Lys Asp Glu Lys Glu Asp Ser	530	535	540
Lys Glu Asn Thr Lys Glu Lys Asp Lys Ile Asp Gly Thr Ala Glu Glu	545	550	555
			560

Thr	Glu	Glu	Arg	Glu	Gln	Ala	Thr	Pro	Arg	Gly	Arg	Lys	Thr	Ala	Asn	
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Ser	Gln	Gly	Arg	Arg	Lys	Gly	Arg	Ile	Thr	Arg	Ser	Met	Thr	Asn	Glu	
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Ala	Ala	Ala	Ala	Ser	Ala	Ala	Ala	Ala	Ala	Ala	Thr	Glu	Glu	Pro	Pro	
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Pro	Pro	Leu	Pro	Pro	Pro	Pro	Glu	Pro	Ile	Ser	Thr	Glu	Pro	Val	Glu	
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Thr	Ser	Arg	Trp	Thr	Glu	Glu	Glu	Met	Glu	Val	Ala	Lys	Lys	Gly	Leu	
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Val	Glu	His	Gly	Arg	Asn	Trp	Ala	Ala	Ile	Ala	Lys	Met	Val	Gly	Thr	
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Lys	Ser	Glu	Ala	Gln	Cys	Lys	Asn	Phe	Tyr	Phe	Asn	Tyr	Lys	Arg	Arg	
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His	Asn	Leu	Asp	Asn	Leu	Leu	Gln	Gln	His	Lys	Gln	Lys	Thr	Ser	Arg	
		675					680					685				
Lys	Pro	Arg	Glu	Glu	Arg	Asp	Val	Ser	Gln	Cys	Glu	Ser	Val	Ala	Ser	
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Thr	Val	Ser	Ala	Gln	Glu	Asp	Glu	Asp	Ile	Glu	Ala	Ser	Asn	Glu	Glu	
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Glu	Asn	Pro	Glu	Asp	Ser	Glu	Val	Glu	Ala	Val	Lys	Pro	Ser	Glu	Asp	
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Ser	Pro	Glu	Asn	Ala	Thr	Ser	Arg	Gly	Asn	Thr	Glu	Pro	Ala	Val	Glu	
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Leu	Glu	Pro	Thr	Thr	Glu	Thr	Ala	Pro	Ser	Thr	Ser	Pro	Ser	Leu	Ala	
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Asn	Asp	Ser	Ile	Ser	Ala	Glu	Thr	Ala	Glu	Gln	Met	Asp	Val	Asp	Gln	
785					790					795					800	
Gln	Glu	His	Ser	Ala	Glu	Glu	Gly	Ser	Val	Cys	Asp	Pro	Pro	Pro	Ala	
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Thr	Lys	Ala	Asp	Ser	Val	Asp	Val	Glu	Val	Arg	Val	Pro	Glu	Asn	His	
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Ala	Ser	Lys	Val	Glu	Gly	Asp	Asn	Thr	Lys	Glu	Arg	Asp	Leu	Asp	Arg	
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Ala	Ser	Glu	Lys	Val	Glu	Pro	Arg	Asp	Glu	Asp	Leu	Val	Val	Ala	Gln	
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Gln Ile Asn Ala Gln Arg Pro Glu Pro Gln Ser Asp Asn Asp Ser Ser  
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 Ala Thr Cys Ser Ala Asp Glu Asp Val Asp Gly Glu Pro Glu Arg Gln  
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 Arg Met Phe Pro Met Asp Ser Lys Pro Ser Leu Leu Asn Pro Thr Gly  
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 Ser Ile Leu Val Ser Ser Pro Leu Lys Pro Asn Pro Leu Asp Leu Pro  
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 Gln Arg His Ile Lys Ala Met His Glu Ser Ala Leu Leu Glu Glu Gln  
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 Arg Gln Arg Gln Glu Gln Ile Asp Leu Glu Cys Arg Ser Ser Thr Ser  
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 Ser Tyr Thr Gln Glu Thr Pro Lys Pro Ser Val Gly Ser Ile Ser Leu  
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 Gly Leu Pro Arg Gln Gln Glu Ser Ala Lys Ser Ala Thr Leu Pro Tyr  
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 Ile Lys Gln Glu Glu Phe Ser Pro Arg Ser Gln Asn Ser Gln Pro Glu  
 1105 1110 1115 1120  
 Gly Leu Leu Val Arg Ala Gln His Glu Gly Val Val Arg Gly Thr Ala  
 1125 1130 1135  
 Gly Ala Ile Gln Glu Gly Ser Ile Thr Arg Gly Thr Pro Thr Ser Lys  
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 Ile Ser Val Glu Ser Ile Pro Ser Leu Arg Gly Ser Ile Thr Gln Gly  
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Thr Pro Ala Leu Pro Gln Thr Gly Ile Pro Thr Glu Ala Leu Val Lys  
 1170 1175 1180  
 Gly Ser Ile Ser Arg Met Pro Ile Glu Asp Ser Ser Pro Glu Lys Gly  
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 Arg Glu Glu Ala Ala Ser Lys Gly His Val Ile Tyr Glu Gly Lys Ser  
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 Gly His Ile Leu Ser Tyr Asp Asn Ile Lys Asn Ala Arg Glu Gly Thr  
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 Arg Ser Pro Arg Thr Ala His Glu Ile Ser Leu Lys Arg Ser Tyr Glu  
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 Ser Val Glu Gly Asn Ile Lys Gln Gly Met Ser Met Arg Glu Ser Pro  
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 Val Ser Ala Pro Leu Glu Gly Leu Ile Cys Arg Ala Leu Pro Arg Gly  
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 Ser Pro His Ser Asp Leu Lys Glu Arg Thr Val Leu Ser Gly Ser Ile  
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 Lys Tyr Pro Lys Gln Ile Lys Arg Glu Ser Pro Pro Ile Arg Ala Phe  
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 1380 1385 1390  
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 1395 1400 1405  
 Gly Pro Ser Lys Leu Ser Arg Gly Met Pro Pro Leu Glu Ile Val Pro  
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 Gly Glu Thr Val Arg Ser Arg His Thr Ser Val Val Ser Ser Gly Pro  
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 Ser Val Leu Arg Ser Thr Leu His Glu Ala Pro Lys Ala Gln Leu Ser  
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Pro Gly Ile Tyr Asp Asp Thr Ser Ala Arg Arg Thr Pro Val Ser Tyr  
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 Gln Asn Thr Met Ser Arg Gly Ser Pro Met Met Asn Arg Thr Ser Asp  
 1490 1495 1500  
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 Leu Thr Pro Thr Gln Arg Glu Ser Ile Pro Ala Lys Ser Pro Val Pro  
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 Ser Met Ser Pro Gly His Pro Thr His Leu Ala Ala Ala Ala Ser Ala  
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 Glu Ser Lys His Glu Ala Ala Arg Leu Glu Glu Asn Leu Arg Ser Arg  
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 Val Glu Lys Arg Ser Val Gln Cys Leu Tyr Thr Ser Ser Ala Phe Pro  
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 1940 1945 1950  
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 1955 1960 1965  
 Pro Ser Asp Ala Ile Glu Val Ile Ser Pro Ala Ser Ser Pro Ala Pro  
 1970 1975 1980  
 Pro Gln Glu Lys Leu Gln Thr Tyr Gln Pro Glu Val Val Lys Ala Asn  
 1985 1990 1995 2000  
 Gln Ala Glu Asn Asp Pro Thr Arg Gln Tyr Glu Gly Pro Leu His His  
 2005 2010 2015  
 Tyr Arg Pro Gln Gln Glu Ser Pro Ser Pro Gln Gln Gln Leu Pro Pro  
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 Ser Ser Gln Ala Glu Gly Met Gly Gln Val Pro Arg Thr His Arg Leu  
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Phe	Gln	Asn	Ser	Pro	Ser	Ala	Leu	Val	Ser	Thr	Pro	Val	Arg	Thr	Lys	
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Thr	Ser	Asn	Arg	Tyr	Ser	Pro	Glu	Ser	Gln	Ala	Gln	Ser	Val	His	His	
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Glu	Pro	Tyr	Glu	Pro	Ile	Ser	Pro	Pro	Gln	Val	Pro	Val	Val	His	Glu	
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Lys	Gln	Asp	Ser	Leu	Leu	Leu	Leu	Ser	Gln	Arg	Gly	Ala	Glu	Pro	Ala	
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Glu	Gln	Arg	Asn	Asp	Ala	Arg	Ser	Pro	Gly	Ser	Ile	Ser	Tyr	Leu	Pro	
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Asp	Met	Ala	Ala	Ala	Gln	Pro	Gly	Thr	Glu	Ile	Phe	Asn	Leu	Pro	Ala	
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Pro	Ala	Ser	Asn	Leu	Gly	Leu	Glu	Asp	Ile	Ile	Arg	Lys	Ala	Leu	Met	
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Gly	Ser	Phe	Asp	Asp	Lys	Val	Glu	Asp	His	Gly	Val	Val	Met	Ser	Gln	
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Val	Cys	Lys	Pro	Lys	Leu	Ile	Ser	Lys	Ser	Asn	Ser	Arg	Lys	Ser	Lys	
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Tyr Asn Pro Leu Thr Met Arg Met Leu Ser Ser Thr Pro Pro Thr Pro  
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Ile Ala Cys Ala Pro Ser Ala Val Asn Gln Ala Ala Pro His Gln Gln  
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Glu Thr Leu Ser Asp Ser Asp Asp  
2435 2440

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<212> PRT

<213> Drosophila sp.

<400> 12

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Lys Gln Ala Ala His Leu Gln Gln Gln Gln His Gln Ser His Gln Gln  
35 40 45

Gln Gln Gln Gln Gln Gln Asp Gln Arg Thr Asn Leu His Leu Gln Ile  
50 55 60

His His His His Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln  
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Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Gln Gln Gln His  
85 90 95

His Met Gln Gln Gln Gln Gln Gln Gln Pro Leu Ser Pro Pro His Pro  
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Pro Gly Ser Ser Ser Asn Ser Ser Ser Ala Ala Ala Ala Ala Ala Ala  
115 120 125

Ala Ala Ala Ala Ala Ala Ala Val Asn Pro Gly Tyr Pro Pro Ser Ser  
130 135 140

Ala Ala Ala Ala Ala Val Asn Ser Gly Tyr Pro Pro Arg Pro Pro Gln  
145 150 155 160

His Arg Phe Ile Gln Asn Thr Gly Tyr Ser Ile Ala Pro Ala Pro Thr  
165 170 175

Tyr Arg Asp Asn Pro Tyr Ser Arg His Thr Gln Ile Gln Gln Gln Gln  
180 185 190

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln  
          195                        200                        205

Gln Gln Gln Gln Ala Ala Ala Ser Met Pro Glu Tyr Gln Arg Ala Ala  
 210 215 220  
 Ala Arg Ala Ala Val Ala Ala Val Ser Ala Gly Lys Gly Asn Val Ser  
 225 230 235 240  
 Gly Gln Ser Ser Asn Ser Ser Ser Ser Ser Ser Gly Gly Gly Gly Gly  
 245 250 255  
 Gly Gly Ser Ala Gly Gly Ser Ala Pro Pro Gly Gly Gly Val Val Gln  
 260 265 270  
 Val Ser Gln Ser Gly Gly Val Leu Val Met Glu Ala Met Pro His Tyr  
 275 280 285  
 Ala Ser Gln Pro Asn Ser Asn Pro Ser Gln Gln Gln Gln Gln Gln  
 290 295 300  
 Gln Gln Gln Gln Gly Gly Asn Pro Ser Gly Ala Gly Ala Thr Ser Gly  
 305 310 315 320  
 Ala Gly Gly Gly Gly Gly Gly Ser Gly Gly Ser Val Met Val Gly Ser  
 325 330 335  
 Leu Gly Arg Ile Leu Met Pro His Pro Gln Ala Leu Gln Tyr Thr Ser  
 340 345 350  
 Glu Tyr Leu Thr Asn Ala Thr Ala Ala Val Ala Ala Ala Met Val Asn  
 355 360 365  
 Gln Arg Gln His Leu Gln Leu Gln Gln Gln Gln Gln Gln Gln His Pro  
 370 375 380  
 Pro Glu Pro Phe Gly Gly Gln Gln Pro Tyr Lys Lys Gln Arg Leu Ser  
 385 390 395 400  
 Glu Ala Asn Ala Asn Asn Met Asn His Leu Pro Pro His Pro Gln Gln  
 405 410 415  
 Gln His Gln Gln Gln Gln Gln Gln Gln Gln Gln His Gln Arg Ser Ser  
 420 425 430  
 Pro Ala Gln Val Gln Gln Gln Gln Gln Gln Gln Met Asn Ser Ser Arg  
 435 440 445  
 Gln Ser His Asn Asp Met Cys Arg Gln Val Val Thr Thr Pro Met Gly  
 450 455 460  
 Met Gln Leu Lys Val Glu Thr Leu Pro Gln Gln Gln Gln Lys Gln Gln  
 465 470 475 480  
 Gln His Gln Gln Gln Gln Gln Gln Gln Gln Gly Arg Ser Gln Pro  
 485 490 495  
 Val Val Ser Ser Met Ser Thr Val Val Ser Gln Pro Val Gly Thr Val  
 500 505 510

Thr	Val	Thr	Thr	Ala	Gly	Leu	Ser	Ala	Ser	His	Ser	Gly	Ser	Ser	Gly	515	520	525
Asn	Val	Ala	Ala	Gly	Leu	Gly	Thr	Gly	Asn	Thr	Gly	Ser	Ala	Ser	Thr	530	535	540
Glu	Ala	Tyr	His	Pro	Gln	Val	Glu	Ala	Ile	Ser	Pro	Thr	Leu	Pro	Ser	545	550	555
Asp	Ser	Ser	Ile	Glu	Glu	Arg	Gly	Arg	Thr	Ser	Ala	Lys	Glu	Asp	Leu	565	570	575
Leu	Met	Gln	Ile	Gln	Lys	Val	Asp	Asn	Glu	Ile	Lys	Ser	Ala	Glu	Thr	580	585	590
Thr	Met	Glu	Thr	Leu	Arg	Lys	Lys	Glu	Lys	Ser	Leu	Met	Glu	Glu	Ala	595	600	605
Ala	Leu	Ala	Lys	Glu	Gln	Arg	Ala	Ala	Lys	Glu	Leu	Asn	Asp	Asn	Asn	610	615	620
Asn	Asp	Gln	Glu	Pro	Met	Val	Glu	Leu	Ser	Trp	Arg	Ser	Gln	Met	Leu	625	630	635
Ala	Glu	Lys	Ile	Tyr	Ala	Ala	Asn	Arg	Lys	Thr	Ala	Gln	Ala	Gln	His	645	650	655
Ser	Met	Leu	Gln	Asn	Ala	Ala	Ala	Asp	Glu	Ser	Ser	Pro	Gly	Ser	Val	660	665	670
Ala	Gly	Arg	Pro	Trp	Leu	Pro	Leu	Tyr	Asn	Gln	Pro	Leu	Asp	Val	Glu	675	680	685
Ala	Leu	Ala	Met	Leu	Ile	Arg	Gln	His	Gln	Ser	Gln	Ile	Arg	Ala	Pro	690	695	700
Leu	Leu	Leu	His	Ile	Arg	Lys	Leu	Lys	Ala	Glu	Arg	Trp	Ala	His	Asn	705	710	715
Gln	Gly	Leu	Val	Glu	Lys	Tyr	Thr	Lys	Asp	Gln	Ala	Asp	Trp	Gln	Arg	725	730	735
Arg	Cys	Glu	Arg	Met	Glu	Ala	Ser	Ala	Lys	Arg	Lys	Ala	Arg	Glu	Ala	740	745	750
Lys	Asn	Arg	Glu	Phe	Phe	Glu	Lys	Val	Phe	Thr	Glu	Leu	Arg	Lys	Gln	755	760	765
Arg	Glu	Asp	Lys	Glu	Arg	Phe	Asn	Arg	Val	Gly	Ser	Arg	Ile	Lys	Ser	770	775	780
Glu	Ala	Asp	Leu	Glu	Glu	Ile	Met	Asp	Gly	Leu	Gln	Glu	Gln	Ala	Leu	785	790	795
Glu	Asp	Lys	Lys	Met	Arg	Ser	Tyr	Ala	Val	Ile	Pro	Pro	Leu	Met	His	805	810	815

Asp Ala Arg Gln Arg Arg Cys Ala Tyr His Asn Glu Asn Gly Leu Ile  
                   820                  825                  830  
 Glu Asp Met Val Ala Val His Gln Gln Arg Lys Ala Leu Asn Met Trp  
                   835                  840                  845  
 Thr Ala Gly Glu Lys Glu Thr Phe Lys Glu Lys Tyr Leu Gln His Pro  
                   850                  855                  860  
 Lys Asn Phe Gly Ala Ile Ala Ala Ser Leu Asp Arg Lys Ser Pro Gln  
                   865                  870                  875                  880  
 Asp Cys Val Arg Tyr Tyr Tyr Leu Ser Lys Lys Thr Glu Asn Tyr Lys  
                   885                  890                  895  
 Gln Leu Leu Arg Lys Ser Arg Gln Arg Thr Arg Ser Ser Arg Asn Pro  
                   900                  905                  910  
 Ala Lys Ala Gln Ala Ala Gln Pro Gln Cys Ile Ile Asp Ser Met Thr  
                   915                  920                  925  
 Thr Gly Val Met Thr Arg Leu Gln Arg Glu Gln Gln Gln Lys Ser Gly  
                   930                  935                  940  
 Gly Arg Ser Ser Ala Val Ala Glu Arg Glu Arg Ala Glu Arg Ala Ala  
                   945                  950                  955                  960  
 Glu Arg Glu Arg Val Ala Glu Lys Ala Ala Ala Asp Ala Ala Lys Ala  
                   965                  970                  975  
 Ala Glu Ser Ala Ala Glu Lys Ala Ser Ala Ala Thr Lys Ala Val Glu  
                   980                  985                  990  
 Ala Thr Ala Ala Gly Glu Lys Val Ala Lys Ala Ala Ala Ala Ala Ala  
                   995                  1000                  1005  
 Ala Ala Ala Ala Thr Thr Ala Thr Thr Ala Thr Thr Thr Thr Ser Ser  
                   1010                  1015                  1020  
 Ser Thr Ser Ser Ser Ser Ser Ser Ala Ser Ser Ala Ser Thr Ala Ser  
                   1025                  1030                  1035                  1040  
 Ser Ser Thr Ala Ser Pro Ala Thr Leu Ala Gly Ile Ala Ala Asp Lys  
                   1045                  1050                  1055  
 Thr Asp Ala Gly Lys Thr Ala Ser Ala Ser Asp Lys Asn Ala Ala Thr  
                   1060                  1065                  1070  
 Ala Gly Gly Pro Thr Ala Thr Gly Thr Pro Thr Ala Ala Thr Thr Pro  
                   1075                  1080                  1085  
 Ala Thr Ala Thr Ala Pro Pro Glu Ile Ser Ala Gly Gly Glu Ala Lys  
                   1090                  1095                  1100  
 Ser Lys Asn Ala Glu Glu Glu Ala Ala Ala Thr Ala Gly Ala Ala Thr  
                   1105                  1110                  1115                  1120

Val Ala Thr Ala Gly Thr Pro Ala Thr Gly Ala Ser Ala Ala Ser Ala  
 1125 1130 1135  
 Gly Glu Ala Thr Thr Ala Thr Gly Ala Thr Ala Thr Ala Ala Lys  
 1140 1145 1150  
 Gly Val Gly Lys Pro Glu Thr Ala Thr Glu Pro Ala Gly Thr Ala Ala  
 1155 1160 1165  
 Lys Gly Ala Asp Ser Arg Pro Asp Ala Asn Asp Pro Leu Ala Lys Thr  
 1170 1175 1180  
 Ala Ser Lys Ala Ile Asn Ala Glu Gly Tyr Asn Ala Ile Gly Gly Asn  
 1185 1190 1195 1200  
 Ser Ser Ser Ser Ser Ser Asn Ala Thr Gly Ala Ser Ala Pro Val Gln  
 1205 1210 1215  
 Gly Val Thr Leu Asn Gly Phe Lys Pro Gly Tyr Gln Thr Val Val Met  
 1220 1225 1230  
 Ala Asn Val Lys Ala Ser Thr Gly Gly Asp Asp Ser Gly Ala Asn Ala  
 1235 1240 1245  
 Gly Gly Ala Ala Pro Gly Ser Leu Ala Ala Thr Asn Ala Ser Ile Ala  
 1250 1255 1260  
 Thr Ser Gly Asp Lys Ile Val Lys Thr Thr Pro Ser Ser Arg Ala Pro  
 1265 1270 1275 1280  
 Asn Ser Thr Ser Ser Thr Ala Ala Asn Glu Ser Ser Ser Gly Ala Gly  
 1285 1290 1295  
 Val Asn Thr Tyr Gly His Thr Ala Thr Thr Ala Gly Asn Tyr Leu Gly  
 1300 1305 1310  
 Gln Lys Leu Lys Ala Ala Gln Val Glu Gly Leu Gly Ala Gly Asn Glu  
 1315 1320 1325  
 Leu His Ser Asp Val Ser Glu Ser Lys Arg Lys Arg Phe Glu Leu Asn  
 1330 1335 1340  
 Ser Gly Glu Ala Gly Gly Asn Ala Thr Ser Ala Met Thr Asn Ser Ser  
 1345 1350 1355 1360  
 Thr Ser Gly Ser Met Asn Ile Ser Asn Ser His Gly Leu Lys Ala Asn  
 1365 1370 1375  
 Ala Lys Asp Gly Ser Met Met Ala Lys Thr Ser Met Ala Ser Thr Ser  
 1380 1385 1390  
 Ser Ala Ser Val Val Val Thr Ser Thr Pro Ser Ala Ser Ser Ser Ser  
 1395 1400 1405  
 Leu Ser Ser Ala Ser Ser Met Leu Leu Ile Ser Ala Ala Ser Val Met  
 1410 1415 1420

Ser Thr Ala Ala Gly Ala Thr Ser Ser Ser Thr Ala Thr Thr Thr Ala  
 1425 1430 1435 1440  
 Thr Ala Ser Ala Ile Ser Leu Pro Leu Leu Ala Asp Gly Ser Gly Asn  
 1445 1450 1455  
 Ser Met Val Asn Ala Asn Glu Ile Leu Ala Leu Asp Gly Lys Asp Lys  
 1460 1465 1470  
 Leu Ala Ser Cys Phe Val Cys Lys Ala Glu Ala Cys Pro Arg Thr Arg  
 1475 1480 1485  
 Pro Leu Lys Lys Gly Arg Gly Gln Gln Tyr Gly Ile Pro Asp Glu Thr  
 1490 1495 1500  
 Ile Pro Ala Gly Ala Arg Val Cys Asn Ser Cys Gln Cys Lys Ser Val  
 1505 1510 1515 1520  
 Arg Ser Arg Tyr Pro Asn Cys Pro Leu Pro Thr Cys Pro Asn Pro Lys  
 1525 1530 1535  
 Asp Arg Ala Gln Arg Leu Arg Asn Ile Pro Ser Arg Leu Phe Glu Leu  
 1540 1545 1550  
 Ala Pro Glu Val Arg Asp Pro Leu Met Ala Glu Phe Gln Ile Pro Pro  
 1555 1560 1565  
 His Ala Thr Arg Cys Cys Ser Ala Cys Leu Met Arg Ile Arg Arg Lys  
 1570 1575 1580  
 Leu Asp Pro Gln Leu Asn Leu Thr Asp Gly Ser Ser Gly Gly Ala Gly  
 1585 1590 1595 1600  
 Ser Gly Ser Gly Gly Asp Glu Thr Asp Val Ser Thr Ser Ser Cys Asp  
 1605 1610 1615  
 Glu Arg Glu Pro Gly Gly Ser Asp Thr Ala Ser Val Glu Ser Pro Glu  
 1620 1625 1630  
 Asn Leu Gln Arg His Lys Ser Leu Thr Met Val Lys Gln Gln Gln Gln  
 1635 1640 1645  
 Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln  
 1650 1655 1660  
 Gln Gln Gln Leu Ser Gln Pro Gln Pro Pro Pro Pro Ala Pro Gln Gln  
 1665 1670 1675 1680  
 Gln Lys Gly Ser Ser Gly Arg Gly Gly Asp Gln Gly Thr Pro Leu Ile  
 1685 1690 1695  
 Ile Thr Pro Thr Arg Met Ser Ser Lys Ser Gly Ser Gly Gly Ala Gln  
 1700 1705 1710  
 Thr Ala Gly Asp Asn Glu Arg Leu Leu Pro Pro Ala Ala Gly Gln Ala  
 1715 1720 1725

Pro Lys Lys Gln Lys Thr Ser Glu Glu Tyr Asp Ser Ser Ala Thr Glu  
 1730 1735 1740  
 Thr Ala Asp Glu Glu Asn Glu Asn Ser Pro Ala Asn Arg Gln Ser Pro  
 1745 1750 1755 1760  
 Lys Val Leu Phe His Gly His Gly His Gly His Gly Gly His Ala Asn  
 1765 1770 1775  
 Asn Val Ala Gly Leu Gln Pro Pro Val Ala Asn Met Gly Thr Gly Gly  
 1780 1785 1790  
 Gly Val Gln Pro Gly Gly Ala Ala Gly Gln Gln Val Asn Gly Pro Ile  
 1795 1800 1805  
 Ser Met Arg Arg Glu Ala Val Asn Asn Val Gln Asp Cys Val Phe Ser  
 1810 1815 1820  
 Val Ile Glu Arg Ser Leu Lys His Lys Gly Pro Gln Pro Lys Gly Gly  
 1825 1830 1835 1840  
 Gln Gly Gln Gln Gln Gly Gln Gly Gln Gly Gln Gly Gln Gly Gln Gly  
 1845 1850 1855  
 Gln Thr Pro Gly Gln Ser Gln Ser Pro Ser Gln Gln Gln Gln Gln Gln  
 1860 1865 1870  
 Gln Gln Gln Gln Ser Ala Asn Asn Leu Glu Arg Lys Glu Leu Thr Ile  
 1875 1880 1885  
 Val Arg Glu Tyr Arg Gln Asp Pro Gly Ile Leu Lys Gln Gln Gln Gln  
 1890 1895 1900  
 Gln Gln Gln Ala Gly Gly Ala Pro Pro Thr Ser Ala Ala Gly Ser Leu  
 1905 1910 1915 1920  
 Pro His Gly Thr Ser Val Gln Lys Leu Thr Thr Arg Pro Ala Ala Val  
 1925 1930 1935  
 Ala Pro Pro Pro Pro Ala His Pro Leu Thr Pro Thr Ser Ile Gly Cys  
 1940 1945 1950  
 Ala Gly Ser Asn Asn Gly Thr Ser Asp Ser Leu Ala Thr Leu Ser Val  
 1955 1960 1965  
 Val Asn Ser His Met Gly Met Val Gly Ile Gly His Pro Gly Pro Met  
 1970 1975 1980  
 Ala His Ala Ser Ser Ala Gly Gly Ile Gly Val Asp Lys Ala Thr Ile  
 1985 1990 1995 2000  
 Thr Pro Val Val Lys Ser Ser Ser Gly Ser Ser Lys Ser Gly Gly Gly  
 2005 2010 2015  
 Ser Ala Ser Ser His Ser Thr Ala Thr Pro Pro Glu Thr Ile Ile Tyr  
 2020 2025 2030



Asn Val Pro Val Ala His Pro Gln Arg Gly Ile Pro Pro Pro Ser Gln  
 2035 2040 2045  
 His Ser Val His Pro Ala His Pro Ser His Thr Gln His Pro Ala His  
 2050 2055 2060  
 Pro Gln His Ser Ser His Gly Gln His Thr Gln Leu Gln Val Pro Glu  
 2065 2070 2075 2080  
 Pro Glu Pro Gln Thr Leu Asp Leu Ser Ile Lys Lys Pro Pro Arg Asp  
 2085 2090 2095  
 Gly His Ser Pro His Thr Gly Ala Gly Gly Ser Ser Ser Ser Gly Ser  
 2100 2105 2110  
 Gly Ser Gly Gly Pro Ser Ser Ser Asp Arg His His Gly Pro Pro Pro  
 2115 2120 2125  
 Pro Thr Met Ser Met Lys His Ile Val Arg Ser Gly Gly Met Tyr Arg  
 2130 2135 2140  
 Gly Asp Thr Val Thr Val Pro Ser Leu Ala Ala Pro Ser Ser Tyr Leu  
 2145 2150 2155 2160  
 Tyr Pro Thr Arg Ser Val Lys Ser Ile Gly Gly Gly Gly Val Val Pro  
 2165 2170 2175  
 Gly Val Leu Pro Gly Val Pro Gly Ile Ala Leu Tyr Leu Gln Pro Val  
 2180 2185 2190  
 Pro Val Pro Val Pro Ile Ser Ile Ser Gly Gln Gly Gln Leu Pro Pro  
 2195 2200 2205  
 Lys Ala Gly Gln Pro Pro Pro Ala Gln Pro Pro Ser Gly Arg Gly Val  
 2210 2215 2220  
 Ala Lys Val Pro Pro Lys Leu Ser Pro Gln Gln Ala His His Leu His  
 2225 2230 2235 2240  
 Pro Ser His Gly His Ser Pro Ser Gln Gln Gln Gln Gln Gln Gln  
 2245 2250 2255  
 Gln Gln Gln Gln Gln Gln Gln Gln Ala Ala Ala Ala Gln Gln Gln Leu  
 2260 2265 2270  
 Leu Val Lys Ser Gly Ser Ile Ile His Gly Thr Pro Ala Asn Ser Ala  
 2275 2280 2285  
 Gln Gln Gln Ile Ile Val His Ala Pro Ala Thr Ala Ala Ala Pro  
 2290 2295 2300  
 Ser Ser Leu Phe Ser Pro Lys Phe Asp Gly Leu Val Arg Gln Thr Thr  
 2305 2310 2315 2320  
 Pro Glu Gly Val Gly Ser Val Gly Pro Gly Gly Ala Ser Gly Ser Gly  
 2325 2330 2335

Lys His Gly Ser Ile Thr Gln Gly Thr Pro Leu His Met Pro Pro His  
 2340 2345 2350  
 His Leu Glu Ser Lys Arg Pro Tyr Glu Ser Tyr Tyr Lys Ser Ser Gln  
 2355 2360 2365  
 Arg His Ser Pro Ala Gln Gln Pro Gly Gly Asn Gln Gln Leu Pro Pro  
 2370 2375 2380  
 Pro Pro Gln Gln Ser Ser Pro Gln Ala Pro Pro Pro Gln Gly Tyr Gly  
 2385 2390 2395 2400  
 Val Gly Val Ser Ser Pro Tyr Ala Arg Ser Pro Phe Ala Gly Val Val  
 2405 2410 2415  
 Glu Gln Pro Gln Val Leu Ser Thr Arg Gln Ile Val Met His Asp Tyr  
 2420 2425 2430  
 Ile Thr Ser Gln Gln Met Gln Gly Gln Gln Gln Gln Gln Gln Gln  
 2435 2440 2445  
 Gln Gln Gln Gln Arg Asn Met Ser Arg Gly Ser Ser Ala Ser Gly Gly  
 2450 2455 2460  
 Gly Gly Gly Gly Gly Ser Asp Lys Glu Ser Pro Ser Pro Arg Asn Ser  
 2465 2470 2475 2480  
 Val Gly Ser Ala Ser Gly Phe Ala Tyr Gly Gly Asp Lys Glu Ser Ala  
 2485 2490 2495  
 Pro Arg Gly Arg Pro Glu Tyr Ser Ser Arg Ala Ser Pro Ala Asp His  
 2500 2505 2510  
 Val Asn Ser Thr Pro Ser Pro His Arg Thr Pro Pro Pro Gln Arg Gln  
 2515 2520 2525  
 Gly Val Ile Gln Arg His Asn Thr Gly Ser Lys Pro Pro Ser Pro Ala  
 2530 2535 2540  
 Ala Pro Pro Pro Ser Arg Met His Met Pro Pro Tyr Gln Tyr Ala Pro  
 2545 2550 2555 2560  
 Ser Gly His Asp Ala Leu Ala Ser Phe Val Asp Val Ala Val Gln Gln  
 2565 2570 2575  
 Pro Gln Leu Pro Val Pro Ser Gln Lys Asp Asp Lys Ser Pro Gly Pro  
 2580 2585 2590  
 Ser Thr Ala Pro Gly Gln Val Pro Gly Ser Gly Pro Pro Leu Gly Pro  
 2595 2600 2605  
 Ser Pro Leu Pro Pro His Ala Val Val Gly Val Ala Gln Pro Pro Pro  
 2610 2615 2620  
 Pro Thr Ala His His Asp Gln Arg Tyr Arg Asp Leu Thr Leu His His  
 2625 2630 2635 2640

His His His Thr Leu Val Gln Gln Gln Ile Ala Gln Gln Gln His Tyr  
 2645 2650 2655  
 Arg Ser Leu Asn Val Ala Ala Gln Val Asp Met Gln Arg Gln Met Asp  
 2660 2665 2670  
 Gln Ala Lys Arg Val Met Arg His Gln Gln His Gln Val Gln Gln Gln  
 2675 2680 2685  
 Gln Gln Gln Gln Gln Gln Gln Gln His Asn His Ala Leu Glu Arg Asp  
 2690 2695 2700  
 Arg Glu Met Gln Glu Arg Met Arg Glu Arg Asp Arg Glu Arg Glu Arg  
 2705 2710 2715 2720  
 Glu Arg Glu Arg Glu Gln Arg Glu Arg Glu Arg Glu Arg Glu Arg Glu  
 2725 2730 2735  
 Arg Glu Arg Glu Arg Glu Arg Arg Glu Gln Asp Arg Ala Arg Arg Val  
 2740 2745 2750  
 Val Ala Glu Glu Arg Glu His Asp Ser Arg Arg Met Glu Arg Met Phe  
 2755 2760 2765  
 Ala Gly Asn Val Val Thr Gly Ser Gly Gly Ala Gly Gly Gly Gly Pro  
 2770 2775 2780  
 Ser Pro Gly Gln Phe Leu Arg Ala Ser Val Pro Glu Thr Gly Pro Pro  
 2785 2790 2795 2800  
 Arg Ser Ile Pro Asp Arg Glu Arg Glu Ser Tyr Tyr Arg Gln Ala His  
 2805 2810 2815  
 Gly Gly Pro Ala Pro Glu Asp Thr Pro Gly Gln Leu Ser Ala Gln Ser  
 2820 2825 2830  
 Leu Ile Asp Ala Ile Ile Lys His Glu Ile Asn Arg Ser Asn Asp Ala  
 2835 2840 2845  
 Thr Ala Gly Pro Gly Arg Glu Phe Pro Arg Pro Ser Phe Val His Ala  
 2850 2855 2860  
 Pro Leu Pro Pro Arg Gly Ser Gly Ser Gly Gly Gly Thr Gly Thr Arg  
 2865 2870 2875 2880  
 Ser Ser Pro Ala Asn Val Leu His Pro Met Tyr Leu Arg Asp Leu Arg  
 2885 2890 2895  
 Gln Pro Leu Asp Gly Gly Ala Gly Ser Met Leu Thr Ala Glu Asn Asn  
 2900 2905 2910  
 Gly Lys Pro Ser Ser Ser Gly Ser Pro Ser Val Ile Asn Ile Asp Leu  
 2915 2920 2925  
 Asp Gln Glu Arg Ile Ser Ala Ala Ala Ala Val Ala Gln Gln Gln  
 2930 2935 2940

Gln Gln Gln Gln Ala Pro Pro Ser Gln Ser Ser Gln Ser Arg Ser  
 2945 2950 2955 2960  
 Val His Gly Gln Leu Arg Thr Pro Thr Ser Gln Ser Gly Gly Ser Ala  
 2965 2970 2975  
 Pro Ser Pro Gln Gln Ile His Thr Lys Ser Ile Thr Phe Gly Glu Leu  
 2980 2985 2990  
 Thr Asp Ser Ile Ile Thr Ser Asp Tyr Gly Thr Asn Pro His Leu Arg  
 2995 3000 3005  
 Pro Pro Tyr Met Ala Tyr Leu Gln Glu Thr Gln Ser Ile Leu Pro Pro  
 3010 3015 3020  
 Asp Arg Trp Lys Gln Asn Arg Arg Met Gln Gln Lys Ala Glu Glu Ala  
 3025 3030 3035 3040  
 Asn Asp His Ser Gln Gln Gln Gln Gln Gln His Gln Gln Gln His  
 3045 3050 3055  
 His Ala Gln Gln Gln Gln Gln Gln Gln Gln Gln His His Ala Gln Gln  
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 His His Pro Gln Met Pro Gly Thr Gly Ser Gly Ser Ala Pro Gly Gly  
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 Ala Gly Gln Gly Gly Gly Ser Gly Gly Pro Gly Ser Gly Gly Gly Gly  
 3090 3095 3100  
 Ala Gly Arg Ala Ser Thr Pro Gly Glu Asp Gly Arg Asn Ile Ile Arg  
 3105 3110 3115 3120  
 Met Pro Gln Ala Val Ser Pro Arg Lys Phe Asn His Glu Met Met Leu  
 3125 3130 3135  
 His His Val Met Gly Thr Thr Gly Ala Gly Gly Glu Ala Gly Gln Phe  
 3140 3145 3150  
 Phe Leu Pro Ser Arg Val Val Leu Pro Glu Gln Arg Gly Thr Pro Ser  
 3155 3160 3165  
 Gly Gly Gly Gly Ala Pro Gly Ala Gly Gly Pro Gly Ser Gly Gly Gly  
 3170 3175 3180  
 Ala Thr Thr Ile Glu Lys Tyr Val Lys Thr Arg Ile Ala Glu Val Met  
 3185 3190 3195 3200  
 Arg Asp Asp Ile Gly Tyr Gly Lys Asn Arg Thr Val Glu Val Arg Thr  
 3205 3210 3215  
 Glu Asp Glu Val Thr Ala Asp Met Val Ala His Ser His Ala Ala Val  
 3220 3225 3230  
 His Ala Ala His Val Ala His Ala Ala His Val Ala His Ala Ala Ala  
 3235 3240 3245

Met Glu Leu Gln His Arg Ser Lys Glu Pro Pro Pro Glu Ile Ser  
 3250 3255 3260

Val Ser Arg Lys Thr Pro Asn Gln Tyr Glu Val Val Asp Ala Ser Gly  
 3265 3270 3275 3280

Arg Arg Ser Ala Gly Ser Gly Ser Val Ser Val Ser Val Ser Gly Ala  
 3285 3290 3295

Asn Ser His His Ser Pro Tyr His Pro Pro Ala Ala Ala Tyr Ala Pro  
 3300 3305 3310

Ser Thr Tyr Ala Phe Pro Tyr Ser Ala Leu Asn Val Pro Gly Ala Ala  
 3315 3320 3325

Gly Gly Leu Pro Pro His Gln Pro Leu Gln Leu Ala His Gln Ala Val  
 3330 3335 3340

Ala Pro Pro Gly Ala Phe Ala Lys Ala Lys Ala Ala His Ala Leu Ser  
 3345 3350 3355 3360

Glu Leu Gly Ala Val Gly Gly Gly Val Ser Leu Val Val Gly Gly Gly  
 3365 3370 3375

Ser Gly Gly Ile Ala Gly Gly Pro Gly Gly Val Ser Val Gly Val Gly  
 3380 3385 3390

Val Pro Gly Gly Gly Gly Pro Gly Ser Gly Gly Gly Gly Gly Gly Gly  
 3395 3400 3405

His Asn Ser Ser Ser Ser Gln Ala Ser Ala Ala Val Ala Ala Ala Val  
 3410 3415 3420

Ala Ala Ala Ala Ser Glu Ser Lys Pro Leu Leu Leu Ser Lys Tyr Asp  
 3425 3430 3435 3440

Ala Leu Ser Asp Glu Asp  
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<210> 13

<211> 9

<212> PRT

<213> Drosophila sp.

<400> 13

Met Ala Pro Lys Lys Lys Arg Lys Val  
 1 5

<210> 14

<211> 51

<212> PRT

<213> Drosophila sp.

<400> 14

Phe Arg His Ile Thr Glu Ile Thr Ile Leu Thr Val Gln Leu Ile Val  
 1 5 10 15

Glu Phe Ala Lys Gly Leu Pro Ala Phe Tyr Lys Ile Pro Gln Glu Asp  
                   20                  25                  30

Gln Ile Thr Leu Leu Lys Ala Cys Ser Ser Glu Val Met Met Leu Arg  
           35                  40                  45

Met Ala Arg  
       50

<210> 15

<211> 51

<212> PRT

<213> Rattus sp.

<400> 15

Phe Ser Glu Phe Thr Lys Ile Ile Thr Pro Ala Ile Thr Arg Val Val  
   1                  5                  10                  15

Asp Phe Ala Lys Lys Leu Pro Met Phe Ser Glu Leu Pro Cys Glu Asp  
           20                  25                  30

Gln Ile Ile Leu Leu Lys Gly Cys Cys Met Glu Ile Met Ser Leu Arg  
       35                  40                  45

Ala Ala Val  
       50

<210> 16

<211> 51

<212> PRT

<213> Homo sapiens

<400> 16

Trp Asp Lys Phe Ser Glu Leu Ala Thr Lys Cys Ile Ile Lys Ile Val  
   1                  5                  10                  15

Glu Phe Ala Lys Arg Leu Pro Gly Phe Thr Gly Leu Ser Ile Ala Asp  
           20                  25                  30

Gln Ile Thr Leu Leu Lys Ala Ala Cys Leu Asp Ile Leu Met Leu Arg  
       35                  40                  45

Ile Cys Thr  
       50

<210> 17

<211> 51

<212> PRT

<213> Rattus sp.

<400> 17

Trp Glu Glu Phe Ser Met Ser Phe Thr Pro Ala Val Lys Glu Val Val  
   1                  5                  10                  15

Glu Phe Ala Lys Arg Ile Pro Gly Phe Arg Asp Leu Ser Gln His Asp  
                   20                  25                  30

Gln Val Asn Leu Leu Lys Ala Gly Thr Phe Glu Val Leu Met Val Arg  
           35                  40                  45

Phe Ala Ser  
       50

<210> 18

<211> 275

<212> PRT

<213> Drosophila sp.

<400> 18

Lys Glu Asp Leu Leu Met Gln Ile Gln Lys Val Asp Asn Glu Ile Lys  
   1                  5                  10                  15

Ser Ala Glu Thr Thr Met Glu Thr Leu Arg Lys Lys Glu Lys Ser Leu  
           20                  25                  30

Met Glu Glu Ala Ala Leu Ala Lys Glu Gln Arg Ala Ala Lys Glu Leu  
       35                  40                  45

Asn Asp Asn Asn Asn Asp Gln Glu Pro Met Val Glu Leu Ser Trp Arg  
       50                  55                  60

Ser Gln Met Leu Ala Glu Lys Ile Tyr Ala Ala Asn Arg Lys Thr Ala  
       65                  70                  75                  80

Gln Ala Gln His Ser Met Leu Gln Asn Ala Ala Ala Asp Glu Ser Ser  
                   85                  90                  95

Pro Gly Ser Val Ala Gly Arg Pro Trp Leu Pro Leu Tyr Asn Gln Pro  
           100                  105                  110

Leu Asp Val Glu Ala Leu Ala Met Leu Ile Arg Gln His Gln Ser Gln  
       115                  120                  125

Ile Arg Ala Pro Leu Leu Leu His Ile Arg Lys Leu Lys Ala Glu Arg  
       130                  135                  140

Trp Ala His Asn Gln Gly Leu Val Glu Lys Tyr Thr Lys Asp Gln Ala  
       145                  150                  155                  160

Asp Trp Gln Arg Arg Cys Glu Arg Met Glu Ala Ser Ala Lys Arg Lys  
           165                  170                  175

Ala Arg Glu Ala Lys Asn Arg Glu Phe Phe Glu Lys Val Phe Thr Glu  
           180                  185                  190

Leu Arg Lys Gln Arg Glu Asp Lys Glu Arg Phe Asn Arg Val Gly Ser  
       195                  200                  205

Arg Ile Lys Ser Glu Ala Asp Leu Glu Glu Ile Met Asp Gly Leu Gln  
       210                  215                  220

Glu Gln Ala Leu Glu Asp Lys Lys Met Arg Ser Tyr Ala Val Ile Pro  
 225 230 235 240

Pro Leu Met His Asp Ala Arg Gln Arg Arg Cys Ala Tyr His Asn Glu  
 245 250 255

Asn Phe Leu Ile Glu Asp Met Val Ala Val His Gln Gln Arg Lys Ala  
 260 265 270

Leu Asn Met  
 275

<210> 19  
 <211> 262  
 <212> PRT  
 <213> Mus sp.

<400> 19  
 Lys Glu Glu Leu Ile Gln Ser Met Asp Arg Val Asp Arg Glu Ile Ala  
 1 5 10 15

Lys Val Glu Gln Gln Ile Leu Lys Leu Lys Lys Lys Gln Gln Gln Leu  
 20 25 30

Glu Glu Glu Ala Ala Lys Pro Pro Glu Pro Glu Lys Pro Val Ser Pro  
 35 40 45

Pro Pro Val Glu Gln Lys His Arg Ser Ile Val Gln Ile Ile Tyr Asp  
 50 55 60

Glu Asn Arg Lys Lys Ala Glu Glu Ala His Lys Ile Phe Glu Gly Leu  
 65 70 75 80

Gly Pro Lys Val Glu Leu Pro Leu Tyr Asn Gln Pro Ser Asp Thr Lys  
 85 90 95

Val Tyr His Glu Asn Ile Lys Thr Asn Gln Val Met Arg Lys Lys Leu  
 100 105 110

Ile Leu Phe Phe Lys Arg Arg Asn His Ala Arg Lys Gln Arg Glu Gln  
 115 120 125

Lys Ile Cys Gln Arg Tyr Asp Gln Leu Met Glu Ala Trp Glu Lys Lys  
 130 135 140

Val Asp Arg Ile Glu Asn Asn Pro Arg Arg Lys Ala Lys Glu Ser Lys  
 145 150 155 160

Thr Arg Glu Tyr Tyr Glu Lys Gln Phe Pro Glu Ile Arg Lys Gln Arg  
 165 170 175

Glu Gln Gln Glu Arg Phe Gln Arg Val Gly Gln Arg Gly Ala Gly Leu  
 180 185 190

Ser Ala Thr Ile Ala Arg Ser Glu His Glu Ile Ser Glu Ile Ile Asp  
 195 200 205



Gly Leu Ser Glu Gln Glu Asn Asn Glu Lys Gln Met Arg Gln Leu Ser  
 210 215 220

Val Ile Pro Pro Met Met Phe Asp Ala Glu Gln Arg Arg Val Lys Phe  
 225 230 235 240

Ile Asn Met Asn Gly Leu Met Glu Asp Pro Met Lys Val Tyr Lys Asp  
 245 250 255

Arg Gln Phe Met Asn Val  
 260

<210> 20

<211> 263

<212> PRT

<213> Homo sapiens

<400> 20

Lys Glu Glu Leu Ile Gln Asn Met Asp Arg Val Asp Arg Glu Ile Thr  
 1 5 10 15

Met Val Glu Gln Gln Ile Ser Lys Leu Lys Lys Lys Gln Gln Gln Leu  
 20 25 30

Glu Glu Glu Ala Ala Lys Pro Pro Glu Pro Glu Lys Pro Val Ser Pro  
 35 40 45

Pro Pro Ile Glu Ser Lys His Arg Ser Leu Val Gln Ile Ile Tyr Asp  
 50 55 60

Glu Asn Arg Lys Lys Ala Glu Ala Ala His Arg Ile Leu Glu Gly Leu  
 65 70 75 80

Gly Pro Gln Val Glu Leu Pro Leu Tyr Asn Gln Pro Ser Asp Thr Arg  
 85 90 95

Gln Tyr His Glu Asn Ile Lys Ile Asn Gln Ala Met Arg Lys Lys Leu  
 100 105 110

Ile Leu Tyr Phe Lys Arg Arg Asn His Ala Arg Lys Gln Trp Lys Gln  
 115 120 125

Lys Phe Cys Gln Arg Tyr Asp Gln Leu Met Glu Ala Leu Glu Lys Lys  
 130 135 140

Val Glu Arg Ile Glu Asn Asn Pro Arg Arg Arg Ala Lys Glu Ser Lys  
 145 150 155 160

Val Arg Glu Tyr Tyr Glu Lys Gln Phe Pro Glu Ile Arg Lys Gln Arg  
 165 170 175

Glu Leu Gln Glu Arg Met Gln Ser Arg Val Gly Gln Arg Gly Ser Gly  
 180 185 190

Leu Ser Met Ser Ala Ala Arg Ser Glu His Glu Val Ser Glu Ile Ile  
 195 200 205

Asp Gly Leu Ser Glu Gln Glu Asn Leu Glu Lys Gln Met Arg Gln Leu  
 210 215 220

Ala Val Ile Pro Pro Met Leu Tyr Asp Ala Asp Gln Gln Arg Ile Lys  
 225 230 235 240

Phe Ile Asn Met Asn Gly Leu Met Ala Asp Pro Met Lys Val Tyr Lys  
 245 250 255

Asp Arg Gln Val Met Asn Met  
 260

<210> 21

<211> 48

<212> PRT

<213> Drosophila sp.

<400> 21

Trp Thr Ala Gly Glu Lys Glu Thr Phe Lys Glu Lys Tyr Leu Gln His  
 1 5 10 15

Pro Lys Asn Phe Gly Ala Ile Ala Ala Ser Leu Asp Arg Lys Ser Pro  
 20 25 30

Gln Asp Cys Val Arg Tyr Tyr Tyr Leu Ser Lys Lys Thr Glu Asn Tyr  
 35 40 45

<210> 22

<211> 48

<212> PRT

<213> Mus sp.

<400> 22

Trp Thr Asp His Glu Lys Glu Ile Phe Lys Asp Lys Phe Ile Gln His  
 1 5 10 15

Pro Lys Asn Phe Gly Leu Ile Ala Ser Tyr Leu Glu Arg Lys Ser Val  
 20 25 30

Pro Asp Cys Val Leu Tyr Tyr Tyr Leu Thr Lys Lys Asn Glu Asn Tyr  
 35 40 45

<210> 23

<211> 48

<212> PRT

<213> Homo sapiens

<400> 23

Trp Ser Glu Gln Glu Lys Glu Thr Phe Arg Glu Lys Phe Met Gln His  
 1 5 10 15

Pro Lys Asn Phe Gly Leu Ile Ala Ser Phe Leu Glu Arg Lys Thr Val  
 20 25 30

Ala Glu Cys Val Leu Tyr Tyr Tyr Leu Thr Lys Lys Asn Glu Asn Tyr  
                   35                                  40  45

<210> 24

<211> 48

<212> PRT

<213> Caenorhabditis elegans

<400> 24

Trp Ser Pro Glu Glu Arg Ser Leu Phe Lys Ser Arg Gln Ala Asp His  
       1                                  5                                  10  15

Val Lys Ile Phe His Gly Leu Thr Glu Phe Phe Val Asp Lys Thr Ala  
                   20                                  25  30

Ser Asp Leu Val Leu Phe Tyr Tyr Met Asn Lys Lys Thr Glu Asp Tyr  
                   35                                  40  45

<210> 25

<211> 48

<212> PRT

<213> Caenorhabditis elegans

<400> 25

Trp Thr Pro Asp Glu Ile Tyr Gln Phe Gln Asp Ala Ile Tyr Gln Ser  
       1                                  5                                  10  15

Glu Lys Asp Phe Asp Lys Val Ala Val Glu Leu Pro Gly Lys Ser Val  
                   20                                  25  30

Lys Glu Cys Val Gln Phe Tyr Tyr Thr Trp Lys Lys Asp Cys Pro Asp  
                   35                                  40  45

<210> 26

<211> 49

<212> PRT

<213> Xenopus sp.

<400> 26

Trp Thr Glu Glu Glu Cys Arg Asn Phe Glu Gln Gly Leu Lys Ala Tyr  
       1                                  5                                  10  15

Gly Lys Asp Phe His Leu Ile Gln Ala Asn Lys Val Arg Thr Arg Ser  
                   20                                  25  30

Val Gly Glu Cys Val Ala Phe Tyr Tyr Met Trp Lys Lys Ser Glu Arg  
                   35                                  40  45

Tyr

<210> 27

<211> 48

<212> PRT

<213> Mus sp.

&lt;400&gt; 27

Trp Thr Glu Glu Glu Met Glu Val Ala Lys Lys Gly Leu Val Glu His  
 1 5 10 15

Gly Arg Asn Trp Ala Ala Ile Ala Lys Met Val Gly Thr Lys Ser Glu  
 20 25 30

Ala Gln Cys Lys Asn Phe Tyr Phe Asn Tyr Lys Arg Arg His Asn Leu  
 35 40 45

&lt;210&gt; 28

&lt;211&gt; 48

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 28

Trp Thr Glu Glu Glu Met Glu Thr Ala Lys Lys Gly Leu Leu Glu His  
 1 5 10 15

Gly Arg Asn Trp Ser Ala Ile Ala Arg Met Val Gly Ser Lys Thr Val  
 20 25 30

Ser Gln Cys Lys Asn Phe Tyr Phe Asn Tyr Lys Lys Arg Gln Asn Leu  
 35 40 45

&lt;210&gt; 29

&lt;211&gt; 48

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 29

Trp Thr Val Glu Asp Lys Val Leu Phe Glu Gln Ala Phe Ser Phe His  
 1 5 10 15

Gly Lys Thr Phe His Arg Ile Gln Gln Met Leu Pro Asp Lys Ser Ile  
 20 25 30

Ala Ser Leu Val Lys Phe Tyr Tyr Ser Trp Lys Lys Thr Arg Thr Lys  
 35 40 45

&lt;210&gt; 30

&lt;211&gt; 48

&lt;212&gt; PRT

&lt;213&gt; Caenorhabditis elegans

&lt;400&gt; 30

Trp Thr Asp Gln Glu Ile Thr Leu Phe Glu Asn Cys Tyr Gln Ile Phe  
 1 5 10 15

Gly Lys Asn Phe Ser Gln Ile Arg Ser Ala Leu Cys His Arg Ser Leu  
 20 25 30

Gln Ser Ile Val Gln Phe Tyr Tyr Glu Ser Lys Lys Arg Val Lys Tyr  
 35 40 45

<210> 31  
 <211> 49  
 <212> PRT  
 <213> Saccharomyces sp.

<400> 31  
 Phe Thr Asp His Glu His Ser Leu Phe Leu Glu Gly Tyr Leu Ile His  
 1 5 10 15  
 Pro Lys Lys Phe Gly Lys Ile Ser His Tyr Met Gly Gly Leu Arg Ser  
 20 25 30  
 Pro Glu Glu Cys Val Leu His Tyr Tyr Arg Thr Lys Lys Thr Val Asn  
 35 40 45

Tyr

<210> 32  
 <211> 16  
 <212> PRT  
 <213> Drosophila sp.

<400> 32  
 Thr Arg Gln Ile Val Met His Asp Tyr Ile Thr Ser Gln Gln Met Gln  
 1 5 10 15

<210> 33  
 <211> 16  
 <212> PRT  
 <213> Homo sapiens

<400> 33  
 Asn Arg Gln Thr Ile Ile Asn Asp Tyr Ile Thr Ser Gln Gln Met His  
 1 5 10 15

<210> 34  
 <211> 16  
 <212> PRT  
 <213> Mus sp.

<400> 34  
 Thr Arg Gln Thr Ile Leu Asn Asp Tyr Ile Thr Ser Gln Gln Met Gln  
 1 5 10 15

<210> 35  
 <211> 17  
 <212> PRT  
 <213> Drosophila sp.

<400> 35  
 Glu Ser Lys Pro Leu Leu Leu Ser Lys Tyr Asp Ala Leu Ser Asp Glu  
 1 5 10 15

Asp

<210> 36  
 <211> 17  
 <212> PRT  
 <213> Homo sapiens

<400> 36  
 Glu Pro Lys Pro Leu Leu Cys Ser Gln Tyr Glu Thr Leu Ser Asp Ser  
     1                    5                    10                    15

Glu

<210> 37  
 <211> 18  
 <212> PRT  
 <213> Mus sp.

<400> 37  
 Glu Pro Ala Pro Leu Leu Ser Ala Gln Tyr Glu Thr Leu Ser Asp Ser  
     1                    5                    10                    15

Asp Asp

<210> 38  
 <211> 14  
 <212> PRT  
 <213> Drosophila sp.

<400> 38  
 Val Lys Ser Gly Ser Ile Ile His Gly Thr Pro Ala Asn Ser  
     1                    5                    10

<210> 39  
 <211> 14  
 <212> PRT  
 <213> Drosophila sp.

<400> 39  
 Gly Lys His Gly Ser Ile Thr Gln Gly Thr Pro Leu His Met  
     1                    5                    10

<210> 40  
 <211> 14  
 <212> PRT  
 <213> Homo sapiens

<400> 40  
 Val Pro Gly Gly Ser Ile Thr Lys Gly Ile Pro Ser Thr Arg  
     1                    5                    10

<210> 41  
 <211> 14  
 <212> PRT  
 <213> Homo sapiens

<400> 41  
 Thr Tyr Arg Gly Ser Ile Thr His Gly Thr Pro Ala Asp Val  
 1 5 10

<210> 42  
 <211> 14  
 <212> PRT  
 <213> Homo sapiens

<400> 42  
 His Ile Arg Gly Ser Ile Thr Gln Gly Ile Pro Arg Ser Tyr  
 1 5 10

<210> 43  
 <211> 14  
 <212> PRT  
 <213> Homo sapiens

<400> 43  
 Leu Lys Glu Gly Ser Ile Thr Gln Gly Thr Pro Leu Lys Tyr  
 1 5 10

<210> 44  
 <211> 14  
 <212> PRT  
 <213> Homo sapiens

<400> 44  
 Ser Ser Gly Gly Ser Ile Ala Arg Gly Ala Pro Val Ile Val  
 1 5 10

<210> 45  
 <211> 14  
 <212> PRT  
 <213> Mus sp.

<400> 45  
 Thr Pro Pro Gly Ser Ile Leu Ile Ser Ser Pro Ile Lys Pro  
 1 5 10

<210> 46  
 <211> 14  
 <212> PRT  
 <213> Mus sp.

<400> 46  
 Ile Met Gly Gly Ser Ile Ser Gln Gly Thr Pro Gly Thr Tyr  
 1 5 10

<210> 47  
 <211> 14  
 <212> PRT  
 <213> Mus sp.

<400> 47  
 Pro Ser Val Gly Ser Ile Ser Leu Gly Leu Pro Arg Gln Gln  
       1                      5                      10

<210> 48  
 <211> 14  
 <212> PRT  
 <213> Mus sp.

<400> 48  
 Val Gln Glu Gly Ser Ile Thr Arg Gly Thr Pro Ala Ser Lys  
       1                      5                      10

<210> 49  
 <211> 14  
 <212> PRT  
 <213> Mus sp.

<400> 49  
 Ser Leu Arg Gly Ser Ile Thr Gln Gly Thr Pro Ala Leu Pro  
       1                      5                      10

<210> 50  
 <211> 14  
 <212> PRT  
 <213> Mus sp.

<400> 50  
 Val Leu Ser Gly Ser Ile Met Gln Gly Thr Pro Arg Ala Thr  
       1                      5                      10

<210> 51  
 <211> 14  
 <212> PRT  
 <213> Mus sp.

<400> 51  
 Ile Ile Glu Gly Ser Ile Ser Gln Gly Thr Pro Ile Lys Phe  
       1                      5                      10

<210> 52  
 <211> 14  
 <212> PRT  
 <213> Caenorhabditis elegans



&lt;400&gt; 52

Gln Thr Gln Gly Ser Leu Thr Ser Gly Thr Pro Phe Gln Ala  
1 5 10